

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

PC Code No.: 014504 (mancozeb) and ETU degradate
DP Barcode: 323143 and 323141
Date: August 11, 2006

SUBJECT: Estimated Drinking Water Concentrations of ETU (Ethylene-thio-urea, degradate of mancozeb, and common degradate of EBDCs "Ethene-bis-dithio-carbamates") for Use in Human Health Risk Assessment.

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Summary

This Memo contains the requested drinking water assessment for the proposed new use patterns of mancozeb (an EBDC pesticide) on broccoli, lettuce, cabbage and pepper (DP 323143) and almonds (DP 323141). Previously, a drinking water assessment was performed for EBDCs and was based on the maximum application rate/number of applications and shortest application intervals following consideration of use patterns for *all* EBDCs including mancozeb (the attached EFED Memorandum to HED dated 08/25/04).

In this referenced memorandum, EDWCs for ETU were calculated for use in an FQPA human health risk assessment for all of the EBDC Pesticides (Metiram, Mancozeb, and Maneb). For reasons stated in this memorandum, previously stated results can be used for the proposed new use patterns. Therefore, the following results still apply to the new use patterns:



- **The chronic EDWC for surface water is 0.1 ppb** of ETU based on a monitoring study conducted by the EBDC Task Force;
- A **range of acute EDWCs** is established with a **lower limit of 0.1 ppb** of ETU (based on monitoring) and an **upper limit of 25.2 ppb** of ETU (based on environmental fate and transport simulation modeling using the linked EPA PRZM and EXAMS models); and
- The **ground water EDWC is 0.21 ppb** of ETU (based on a targeted monitoring study).

Reasons for Assigning the Same EDWCs to New Uses

(1) Use: New patterns versus previously considered patterns.

The new use patterns for mancozeb are included in Table 1.

Table 1. Proposed new crop use patterns for mancozeb¹: maximum rates (lb a.i./acre)/number and minimum intervals (days).

<i>Crop/Diseases</i>	<i>Single Rate</i>	<i>Number</i>	<i>Seasonal Rate</i>	<i>Intervals</i>
Almonds ²	4.8	3	14.4	7
Broccoli & Cabbage ²	1.6	6	9.6	7
Lettuce (All other states) ³				
Peppers (West of the Mississippi) ³				
Lettuce (CA) ³	1.6	4	6.4	7
Peppers (East of the Mississippi) ³	2.4	6	14.4	7

1. Mancozeb proposed formulations: Dithane[®] DF Rainshield[®] (75% a.i.) and Dithane[®] M45 (80% a.i.).

When the new use patterns are compared to the use patterns previously used in modeling for calculating EDWCs of ETU), the following can be concluded:

- For almonds: the new proposed mancozeb rate is lower than the previously used maneb rate (Maneb rates: Max. 6.4 lb a.i./Acre/4 applications/7-10 day's intervals);
- For broccoli and cabbage (cabbage scenario): the new proposed mancozeb rate is identical to the previously used mancozeb rates;
- For peppers: the new proposed mancozeb rate is identical to the previously used maneb rate.
- For lettuce: no modeling was previously performed.

Therefore, modeled EDWCs for the new proposed use patterns of all crops except lettuce, are expected to be identical or lower than those obtained previously. This is the case because EDWCs for a certain scenario are dependent on the EBDC rate (same results are obtained for mancozeb or maneb when the rate is the same). For lettuce, new PRZM/EXAMS runs were performed and as shown in Table 2 the range of resultant EDWCs for ETU are within the range of previously obtained EDWCs.

Table 2. National EDWCs of ETU for lettuce use pattern (PCA adjusted, application date March, 15).

<i>Scenario</i>	<i>Peak</i>	<i>96 hrs</i>	<i>21 days</i>	<i>60 days</i>	<i>90 days</i>	<i>Yearly</i>	<i>All Years</i>
CA Lettuce ¹	7.6	6.9	4.7	3.0	2.0	0.5	0.4
CA Lettuce ²	8.7	7.6	5.9	4.8	4.2	1.1	1.0

¹ Single crop per year: Rate 1.6 lb a.i./single application; 4 applications with 7-day intervals.

² Three crop per year: Rate 1.6 lb a.i./single application; 4x3 applications with 7-day intervals.

Based on these results, it is possible to conclude that previously obtained EDWCs can be used for the proposed new use patterns. In this respect, it is important to note that this stated conclusion is based on the assumption that **the seasonal rate specified in the label are for “total EBDCs” and not for “total mancozeb”**. This restriction is not clear in the proposed labels.

(2) Possible extrapolation of Monitored values

In the previous drinking water assessment for ETU in September 2004, Estimated Drinking Water Concentrations (EDWCs) were based on a combined monitoring and modeling approach. For surface water, a value of 0.1 ppb for ETU was assigned to both chronic/cancer and the chronic/non-cancer endpoints based on the results of a two-year targeted monitoring study conducted by the EBDC Task Force (MRID 46145401). This targeted surface water monitoring study provided the chronic values and a lower bound for the acute drinking water exposure estimate. No concentration values above the ETU limit of detection of 0.1 ppb were found in this study.

Acute peak values over the 0.1 ppb could have been missed as a result of the 14-day sampling intervals. Therefore, modeling was necessary to estimate these values in order to assign a maximum over the 0.1 ppb and arrive at an acute range. This range of acute EDWCs was established with the lower limit of 0.1 ppb (based on monitoring) and an upper limit of 25.2 ppb (based on environmental fate and transport simulation modeling using the linked EPA PRZM and EXAMS models). The highest value in this national level range can be reduced, at the regional level, to 13.9 ppb based upon a regional percent cropped area (PCA) value of 56% for the California region.

While it is generally difficult to extrapolate monitored concentration values from one crop to another, EFED believes that a complete absence of surface water detections in a targeted monitoring study in a high usage area can be extended to other regions. This is likely to be especially true for extrapolation for the northern US areas where the study was conducted to more southern areas where degradation would be expected to occur more rapidly due to higher temperatures. EFED will therefore continue to use the limit of quantization of **0.1 ppb** as the **chronic** exposure value and use of the **range** between this **0.1 ppb** value and **25.2 ppb** the **peak concentration** resulting from PRZM/EXAMS simulations as an estimate of the **acute concentration**..